

my 11/3/03  
and a low  
thermosetting resin and low profile additive, and

(d) drying the impregnated substrate of (c).

61. Synthetic resin film for laminates produced by the method according to claim 55.

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### REMARKS

The undersigned appreciates the Examiner's taking the time to discuss one of the bases for the rejection under Ungar 4,713,138.

The present response amends claims 1-9, 11, 12, 16, 20-22, 26-29 and 33-35, adds new claims 39-61, cancels claims 10, 13, 14, 15, 17, 18, 19, 23, 24, 25, 30, 31, 32, 36, 37, 38 without prejudice and requests reconsideration of the rejected claims. Presently, claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 are pending.

### Information Disclosure Statement Filed April 21, 2000

Copies of all the documents identified in the IDS were submitted, but it is understood that they have become separated from the file or that they were never associated with the file. As requested, additional copies of the documents identified as "other documents" are submitted herewith. Presumably, the Examiner is only requesting the documents identified as "other documents" because she has the remaining documents in her possession and has already made them part of the file; if this presumption is incorrect, kindly so advise and additional copies of all documents will be submitted. It is respectfully submitted that the IDS should be considered, since the copies of the references were sent; this will be further addressed in a separate communication.

### Specification

The requested changes to the specification are made herein. Except that the requested change to page 7, lines 15-16, was made to page 8, lines 15-16, where it was believed to be appropriate. Withdrawal of the objection to the disclosure is requested.

### Claim Objections

The requested changes to claim 3 are made herein. Claim 15 has been cancelled without prejudice. Withdrawal of the objection to the claims is requested.

### Rejections under 35 USC 112, second paragraph

Claims 33-35 and 36-38 are rejected under 35 USC 112, second paragraph. The present response cancels claims 36-38 without prejudice. Claims 33-35 are amended herein to clarify that the substrate is a "base material", as assumed by the Examiner in the Office Action. The recitation of a "base material" is supported by the specification, since it refers to synthetic resin films as being "a surface material for materials comprising wood, for non-limiting example, particle board, medium density fiber board, composite panel and other wood-based materials." Page 2, ll. 9-11. Since the synthetic resin films are the surface materials, the other "materials" are, necessarily, base materials.

### Claim Amendments

Claim 1 is amended to incorporate the subject matter of claim 10. Claims 20-22 and 26 are amended to replace the recitation of the "low profile additive" with - -ceramic microspheres- -. New claim 39 is added to recite that the low profile additive "is inert, substantially spherical and has a particle size in the range of about 5 to about 60 microns." This is supported by the specification, for example, the paragraph bridging pages 5-6. New claims 40-47 recite a method of producing synthetic resin film for laminates by impregnating a substrate with uncured thermosetting resin and ceramic microspheres, and drying the impregnated resin. New claims 48-54 recite a method of producing synthetic resin film for laminates by impregnating a substrate with uncured thermosetting resin and ceramic microspheres, and drying the impregnated resin, the ceramic microspheres comprising about 0.5 to about 4.75% of the thermosetting resin after drying the impregnated substrate. This range of percentages of the additive is supported by the amounts of additive disclosed in Table 1 on page 9 of the specification and calculated using typical film weights known at the time of filing the present application, as set forth in the accompanying Rule 132 Declaration. New claims 55-61 recite a method of producing synthetic resin film for laminates by impregnating a

substrate with uncured thermosetting resin and alkali aluminosilicate ceramic microspheres, and drying the impregnated resin. The recitation of alkali aluminosilicate ceramic microspheres is supported by the disclosure in the specification that an example of the ceramic microspheres is Zeeospheres ceramic microspheres from Zeelan Industries, Inc. and by the 3M and Zeelan Industries, Inc. reference submitted with the April 21, 1999 IDS and resubmitted herewith, which indicates on the 9<sup>th</sup> page thereof that the composition of Zeeospheres ceramic microspheres is alkali aluminosilicate ceramic.

#### Rejections under 35 USC 102(b)

Claims 1-38 are rejected under 35 USC 102(b) as being anticipated by Ungar 4,713,138 (referred to as Ungar '138) and claims 1-2, 4-9, 20-22, 24-29 and 33-35 are rejected under 35 USC 102(b) as being anticipated Ungar 4,741,946 (referred to as Ungar '946). These rejections are respectfully traversed.

#### The Invention

Claims 1-9, 11, 12, 16, 27-29 and 33-35 are directed to a method of producing synthetic resin film for laminates by impregnating a substrate with a first thermosetting resin composition including a first uncured thermosetting resin and a low profile additive, drying the impregnated substrate, impregnating the impregnated substrate with a second thermosetting resin composition including a second uncured thermosetting resin and a low profile additive, and drying the impregnated substrate, the synthetic resin film made by the method and the laminate made by the film. The low profile additive is, by definition, inert and substantially spherical. This is supported by the specification, for example, page 5, ll. 29-30.

Claims 20-22 and 26 are directed to a synthetic resin film impregnated with at least partially cured resin and ceramic microspheres.

Claims 40-47 are directed to a method of producing synthetic resin film for laminates by impregnating a substrate with a thermosetting resin composition including an uncured thermosetting resin and ceramic microspheres, and drying the impregnated substrate, and the synthetic resin film made by the method.

Claims 48-54 are directed to a method of producing synthetic resin film for laminates by impregnating a substrate with a thermosetting resin composition including an uncured thermosetting resin and ceramic microspheres, and drying the impregnated substrate, the ceramic microspheres comprising about 0.5 to about 4.75% of the thermosetting resin after drying the impregnated substrate, and the synthetic resin film made by the method.

Claims 55-61 are directed to a method of producing synthetic resin film for laminates by impregnating a substrate with a thermosetting resin composition including an uncured thermosetting resin and alkali aluminosilicate ceramic microspheres, and drying the impregnated substrate, and the synthetic resin film made by the method.

As a result of including the low profile additive, the synthetic resin film produced by the claimed invention has a higher scratch resistance than in the absence of the additive. See Tables 1 and 2 on pages 9 and 11, respectively.

Furthermore, the fact that the low profile additive is substantially spherical makes it and its function different from an additive which is not substantially spherical. This is further supported by the accompanying Rule 132 Declaration and its attachments discussed below.

It is noted that the cited references are not directed to improving the scratch resistance of a synthetic resin film. Instead, the references are concerned with improving abrasion resistance or abrasion resistance and scuff resistance. Scratch resistance depends more on localized hardness, while abrasion resistance measures wear in the amount of sample lost. See, for example, Ungar '138, col. 10, ll. 29-30. A scratch is more like a cut in the surface, while abrasion refers to the rubbing of the surface. This difference is exemplified by the fact that testing of scratch resistance is conducted using a Teledyne Taber scratch tester which has a weighted diamond point to be drawn in a circular motion over the sample. The scratch resistance is the force, in Newtons, necessary to score a continuous circle in the sample. See page 8, ll. 15-30 of

the specification. On the other hand, scuff resistance is related to marks from sliding contact, "which are not distinctly scratches or cuts". Ungar '946 col. 3, ll. 52-58.

#### Ungar '138

Ungar '138 is cited for allegedly disclosing using a resin containing a low profile additive for impregnating a substrate for providing an abrasion-resistant laminate. It is alleged that the "low profile additive" in Ungar '138 "may comprise ceramic microspheres and polyethylene powder." Page 4 of the Office Action, the paragraph numbered 9. It is respectfully submitted that Ungar '138 does not disclose ceramic microspheres, as in claims 3, 20-22, 26, and 40-61. Further, it does not disclose impregnating a substrate with a first uncured thermosetting resin and a low profile additive, drying the impregnated substrate, impregnating the substrate with a second uncured thermosetting resin and a low profile additive, and drying the impregnated substrate as in claims 1-9, 11, 12, 16, 27-29 and 33-35. Still further, it does not define a low profile additive in accordance with the claimed invention, since it does not disclose an additive which is inert and substantially spherical, as defined in the specification, for example, page 5, ll. 29-30.

#### Ceramic Microspheres

These remarks are specifically directed to claims reciting ceramic microspheres, claims 3, 20-22, 26, and 40-61. Ungar '138 does not disclose an impregnating resin with ceramic microspheres. As noted in the Office Action, Ungar '138 discloses additives, including an abrasion-resistant hard mineral, such as alumina, silica or a mixture thereof (col. 3, ll. 48-60) and a solid lubricant, such as polyethylene powder (col. 9, l. 43 and see col. 4, ll. 12-14 (US application Serial No. 508,629, now US patent 4,567,087)). The examples, which are referred to in the Office Action, include other additives, such as AVICEL microcrystalline cellulose (a binder for the abrasion-resistant hard mineral according to col.3, ll. 58-68), a surfactant and carboxymethyl cellulose (example 3).

The undersigned was uncertain as to which of these additives was considered to represent the claimed ceramic microspheres. The Examiner was kind enough to explain that the silica in Ungar '138 was considered to represent the claimed ceramic. However, the claimed invention is directed to ceramic microspheres, while Ungar '138 does not

disclose that the silica could be in the form of microspheres. Indeed, it is not clear whether silica could be formed into microspheres, since it is naturally crystalline. See the attached copy of a definition of silica in Hawley's Condensed Chemical Dictionary, 9<sup>th</sup> Ed., 1977. Thus, the silica in Ungar '138 is not considered spherical at all, as are the claimed ceramic microspheres.

The function of the claimed microspheres is different from non-spherical additives. This is illustrated by the examples shown in Table A of the accompanying declaration in which the presence of a non-spherical additive either decreases or has no effect on scratch resistance, as compared with the absence of a non-spherical additive. In contrast, Table 1 on page 9 of the specification demonstrates that the presence of ceramic microspheres increases scratch resistance, as compared with the absence thereof. Furthermore, the average scratch resistance of 3.6 Newtons obtained with ceramic microspheres (average calculated using samples in Table 1) is higher than the average scratch resistance of 2.5 Newtons obtained with a non-spherical additive (average calculated using the samples in Table A).

Just for the record, the other additives, besides silica, disclosed in Ungar '138 would also not qualify as the claimed ceramic microspheres. Aluminum oxide (alumina) particles have hard edges and are not substantially spherical. Cellulose fibers are flat and linear, not substantially spherical. The shapes of these additives, and the substantially spherical shape of the claimed ceramic microspheres are illustrated in the pictures attached to the accompanying Rule 132 Declaration.

For a rejection to be sustained under §102(b), each and every element of the claimed invention must be disclosed in the cited prior art reference. In accordance with the above discussion, it is respectfully submitted that claims 3, 20-22, 26, and 40-61 are not anticipated by Ungar '138, at least because Ungar '138 does not disclose an additive of ceramic microspheres. Furthermore, in response to the allegation on page 4 of the Office Action that Ungar '138 would be expected to have scratch resistance of 2.5 N or higher, It is submitted that that it would not be expected to have the same scratch resistant properties, since Ungar '138 does not have the same additive as does the claimed invention. Indeed, it does not have the same scratch resistant properties, as

shown in the accompanying Rule 132 Declaration. It is requested that this rejection of these claims be withdrawn.

Second resin impregnating step

These remarks are specifically directed to claims reciting a second resin impregnating step with additives following drying the impregnated substrate, claims 1-9, 11, 12, 16, 27-29 and 33-35. As stated in the Office Action, Ungar '138 discloses that "the impregnated substrate may be further impregnated with additional resin after the first impregnation." However, in contrast to the claimed invention, Ungar '138 does not include any additive, let alone a low profile additive, in the second resin impregnation step. Further, in contrast to the claimed invention, Ungar '138 does not disclose a drying step between the first and second impregnating steps. Still further, Ungar '138 teaches that the second resin impregnation step is a "non-preferred" step, col. 3, l. 41, and, thus, teaches away from the claimed invention.

Accordingly, it is respectfully submitted that claims 1-9, 11, 12, 16, 27-29 and 33-35 are not anticipated by Ungar '138, at least because Ungar '138 does not disclose including a low profile additive in the second resin impregnation step, or disclose a drying step between the first and second impregnating steps. It is requested that this rejection of these claims be withdrawn.

Ungar '946


This rejection is directed to claims 1-2, 4-9, 20-22, 24-29 and 33-35. The claims are distinguishable from Ungar '946 either for the presence of ceramic microspheres, claims 20-22 and 26, or for including a low profile additive in the second resin impregnation step and a drying step between the first and second impregnating steps, claims 1-2, 4-9, 27-29 and 33-35. Ungar '946 does not disclose a substrate impregnated with resin and ceramic microspheres, as in claims 20-22 and 26, and it is understood that the Office Action did not make any contentions to the contrary. Further, Ungar '946 does not disclose including a low profile additive in the second resin impregnation step and a drying step between the first and second impregnating steps, as in claims 1-2, 4-9, 27-29 and 33-35, and it is understood that the Office Action did not make any contentions to the contrary. Accordingly, it is respectfully submitted that claims 1-2, 4-9,

20-22, 24-29 and 33-35 are not anticipated by Ungar '946, and it is requested that this rejection of these claims be withdrawn.

The present response amends the claims and specification, and adds new claims without the addition of new matter thereby.

Claims 1-9, 11, 12, 16, 20-22, 26-29, 33-35, and 39-61 should be allowable and notice to that effect is earnestly solicited:

Respectfully submitted,

  
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Enclosures: Rule 132 Declaration; Hawley's Condensed Chemical Dictionary;  
Documents identified as "OTHER DOCUMENTS" in the Information Disclosure  
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